

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 554 475 A1

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **92101741.4**(51) Int. Cl.⁵: **A63H 33/08, A63H 33/04**(22) Date of filing: **03.02.92**

(43) Date of publication of application:
11.08.93 Bulletin 93/32

(84) Designated Contracting States:
**AT BE CH DE DK ES FR GB GR IT LI LU MC
NL PT SE**

(71) Applicant: **EDDU TOY CO., LTD.**
19/4 Chitlom Ploenchid
Bangkok 10500(TH)

(72) Inventor: **Laosonthorn, Darani**
19/4 Chitlom Ploenchid
Bangkok 10500(TH)

(74) Representative: **Prechtel, Jörg, Dipl.-Phys. Dr.**
et al
Patentanwälte H. Weickmann, Dr. K. Fincke
F.A. Weickmann, B. Huber Dr. H. Liska, Dr. J.
Prechtel Kopernikusstrasse 9 Postfach 86 08
20
W-8000 München 86 (DE)

(54) **Joining of toy parts.**

(57) A connecting part of toy used in the interconnected assembly is provided which part is gouged into grooves at the base edges of the part for interconnection without slipping off and without the use of other material for fastening.

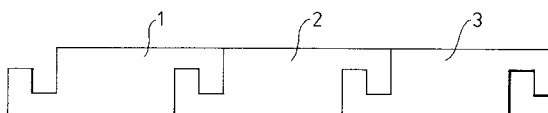


Fig. 1

EP 0 554 475 A1

1. Features and objectives of the invention in brief

This invention relates to the use of roof, floor and wall types of joggle joints usable in the assemblage of toys made from wood or plastic in such a way that children can assemble various parts into different building structures such as houses or others without any limitation on patterns

The objectives of this invention is to provide connector or tongue-and-groove joint of roof that can be widely used in every form, every degree of gable roof, in any directions of arrangement namely vertical, horizontal, oblique and curve, for joining surface of material without slipping off regardless of patterns and directions of arrangement ie. vertical, horizontal, oblique and curve

A further objective of this invention is to fix materials (wood, plastics) together at various angles and without shipping off by using no other additional material for binding such as adhesive. Moreover it can be dismantled into parts of the said products for storage and the said parts can be reassembled, in doing so children will be able to study and develop creative idea of high quality and expansiveness without any limitation. This will promote imagination of children without limiting it to a narrow scope and can also be used as an aid in designing for those who plan to build various types of buildings

2. Field of art related to the invention

Engineering, architecture

3. Background of the related art

In the field of toy for education, there are many types that children can use for expressing their idea and creative thinking, for example the construction of houses and buildings and other inventions. However, various accessories currently available still have some limitation in connecting and fastening together such that it is impossible to construct or assemble according to the imagined pattern and to the desire of children because in some assemblage dowel, hole drilling, gluing and additional materials are required, this will put much limitation on the assembly operation.

4. Complete disclosure of the invention

According to this invention, materials to be assembled into toy construction works or buildings will be gouged into L-shaped grooves at the longitudinal edges of the parts, this L-shaped groove will receive another part with its longitudinal edge also gouged into an overturn L-shaped groove. The overturn L-shaped groove will fit nicely to the L-

shape groove of the first part and will bind together by natural force.

This binding joint can be used in connection and construction of models of houses and buildings and others according to one's desire by making parts of different pattern especially the angle size and general feature to suit specific use such as roof gable, roof, house wall and others.

Now the detailed description of the invention will be given by referring to the accompanied drawings that illustrate various patterns of parts as follow:

Fig.1 shows long parts each having two grooves.

Figs. 2-5 show associated accessories with various angles and their arrangement.

Figs. 6-11 show other patterns of various types of parts

Fig. 12 shows parts in the form of a pyramid and their arrangement.

Fig. 13 shows a special part in the form of cross section.

Fig. 14 shows the longitudinal side of the part of Fig. 13

Fig. 15 shows gouging into two L-shaped grooves obliquely arranged in succession.

Fig. 1 "shows typical long parts" with edges on both side gouged into L-shaped grooves, one edge is gouged into upturn L-shaped groove while the other edge is gouged into overturn L-shaped groove in perfect fit with the next upturn L-shaped groove of the next part. This Fig. 1 shows cross section of various parts of No. 1, 2 and 3 arranged one over another and can be arranged in continuous fashion indefinitely by self binding without the use of any additional fastening material such as nails or glue in the assembly operation.

The typical proportion of this binding joint can be such that, for example, the size of the dowel is half of the thickness of that area when the original thickness is divided three equal parts.

Further, this invention includes various pattern of assemblage of parts which can be assembled vertically, obliquely or horizontally and these binding joints on both sides can be made in the pattern of varying angles according to the nature of the inclined angle of the associated accessories as further exemplified along with drawings.

Fig. 2 is an illustration of associated accessory of 90° type that can be used in the assembly with the binding joints inclining by 45° on both sides. This associated accessory has a cross section as shown in Fig 2, ie. triangle-like, in which the base edges on both side are gouged into grooves 5,5' with L-shaped cross section identical to that of Fig 1, and underneath the base there is a dent of 90° with its peak in the same straight line as the peak of the associated accessory 4.

Fig. 3 shows an associated accessory 6 with 60° angle which is similar in nature as the associated accessory 4 but with the size of peak angle and peak angle of the dent B of 60°.

Fig. 4 shows an associated accessory 7 with 120° angle which is similar in nature as the associated accessory 4 and 6 but with the size of peak angle and peak angle of the dent C of 120°

Fig. 5 shows an associated accessory 8 with 105° angle in which the size of peak angle and peak angle of the dent is 105°

Fig. 6 shows an associated accessory 9 with cross section as shown in the drawing in which the L-shaped groove is gouged with an inclined angle of 60° with the horizontal plane, ie angle E.

Fig. 7 shows an associated accessory 10 with cross section as shown in which the L-shaped groove is gouged at the upper part of the accessory and underneath the L-shaped groove a right angle groove F or a groove of other angle is gouged as shown in Fig. 8 that shows associated accessory 11.

Fig. 9 shows another pattern for making an associated accessory 12 in which the L-shaped is gouged in an inclined plane.

Fig. 10 shows the gouging of L-shaped grooves in an associated accessory 13 in which one edge is gouged according to the pattern of Fig. 1 and the other side of the part is gouged in the shape of L lying on one side ($\sqsubset$) or it can be gouged in the general shape of L on each edge turning its side to each other as shown in Fig. 11 that shows the associated accessory 14

Fig. 12 shows a pyramid shaped associated accessory 15 which is gouged at the base.

Fig. 13 and 14 show a cross section and a view along the longitudinal axis of an associated accessory 16 which is gouged into grooves of special type.

In addition, there are still other associated accessories with different shapes such as that shown in Fig. 2a which is a triangle with right angle at the peak. This figure shows the cross section of the associated accessory 17. Other than this, there are still associated accessories with cross sections of triangles having various sizes and angles such as rightangled triangle with the base angles of 30° and 60° respectively as in the associated accessories 18, 18' in Fig 2 c or a rectangular associated accessory 19 as shown in Fig 6a or 10a or that in the shape of triangle with one curved side such as the associate accessory 20 in Fig. 11a

The following will be examples of the result of connecting various parts and accessories into different shape, however, it should be understood that these are not meant to be limiting to the scope of this invention in any way.

Fig 1. is a continuous arrangement of parts gouged into L-shaped grooves on both sides, they can be arranged linearly, obliquely or vertically such as in the form of floor, wall or roof in which the connection will be similar in nature to a holding hook. The use of associated accessory 4 is shown in Fig 2b, it can be used in combination with the associated accessory 17 having a triangular cross section and parts/such as for making roof. The way to do it is to use the top part of the associated accessory 17 as support under the top cover which is the associated accessory 4 and to hook parts 1 along the downward planes, thereby a roof of equilateral triangle with 45° angles at the base is obtained

In another form of arrangement as shown in Fig. 2c, triangular associated accessories 18, 18' can be assembled as support under the associated accessory 4 and hook parts 1 along the downward planes, thereby a roof of different inclined angles is obtained in the same fashion as those in Fig 3a, 4a and 5a respectively.

In Fig. 6a, the associated accessory 18 in combination with rectangular block 19 are used as support for the associated accessory 9 and parts 1 in order to obtain a roof with a sharp peak in the same fashion as those in Fig 7a, 8a, 9a and 10a which can be used as roof, floor wall

Fig 11a, 11b are another type of connection to obtained curved roof using associated accessories 14, 20 and parts 1 as shown in the drawing.

Important aspects of the described invention are as follows:

A connecting part of toy used in the interconnected assembly is provided which part is gouged into grooves at the base edges of the part for inter-connection without slipping off and without the use of other material for fastening.

Claims

1. Connecting part of toy used in the interconnected assembly characterized in that the part is gouged into grooves at the base edges of the part for inter-connection without slipping off and without the use of other material for fastening.
2. Connecting part according to claim 1 in which the said grooves are in the shape of upturn L on one side of the base edge and in the shape of overturn L on the other side of the base edge.
3. Connecting part according to claim 1 in which the said grooves are in the shape of upturn L on both sides of base edges with the long arm of L turning to each other.

4. Connecting part according to claim I in which there is a groove in the shape of upturn L only one side at the base edge.
5. Connecting part according to claim I in which one side of the edges is gouged into two L-shaped grooves obliquely arranged in succession.

5

10

15

20

25

30

35

40

45

50

55

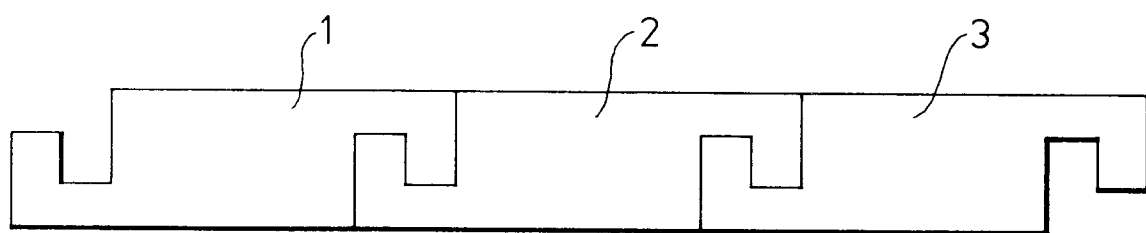


Fig. 1

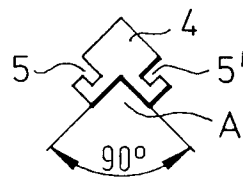


Fig. 2

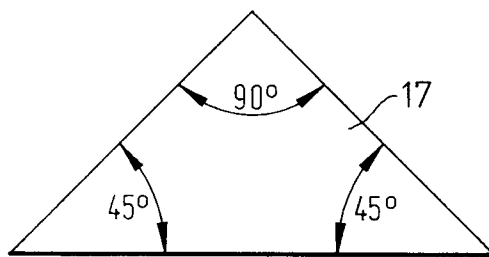


Fig. 2a

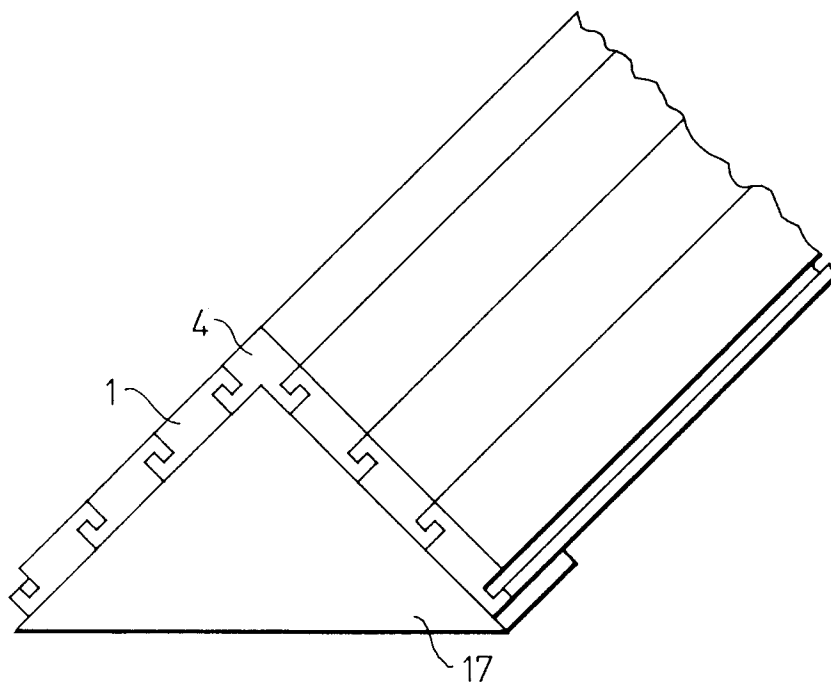


Fig. 2b

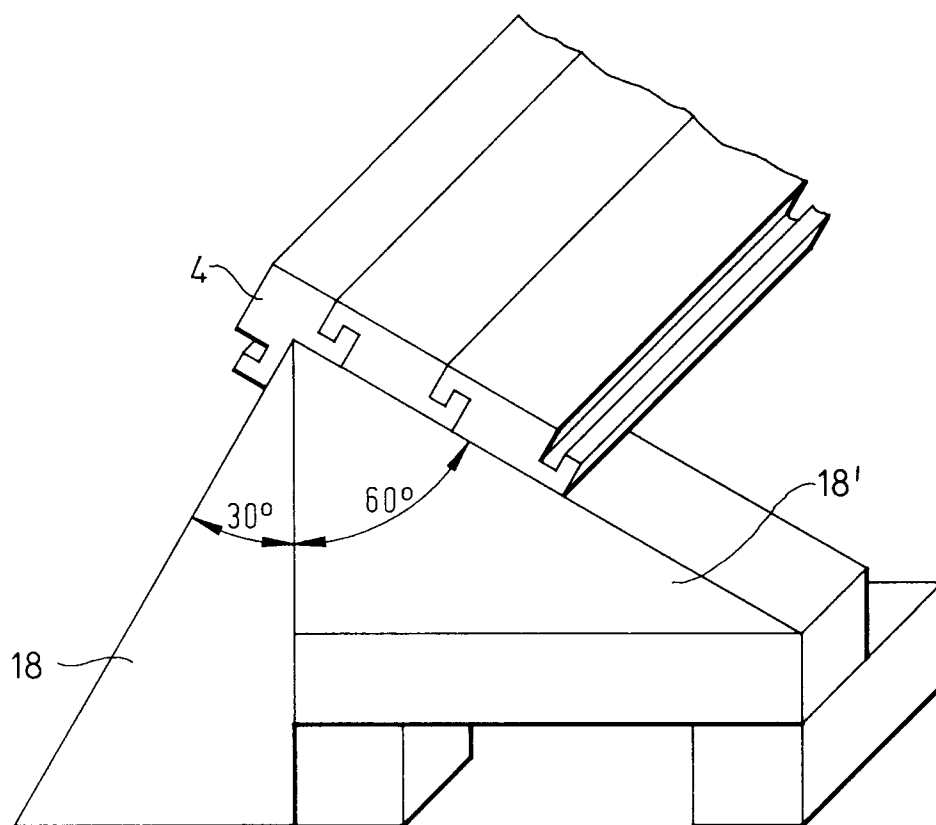


Fig. 2c

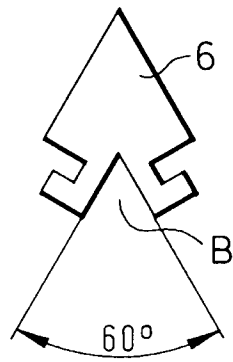


Fig. 3

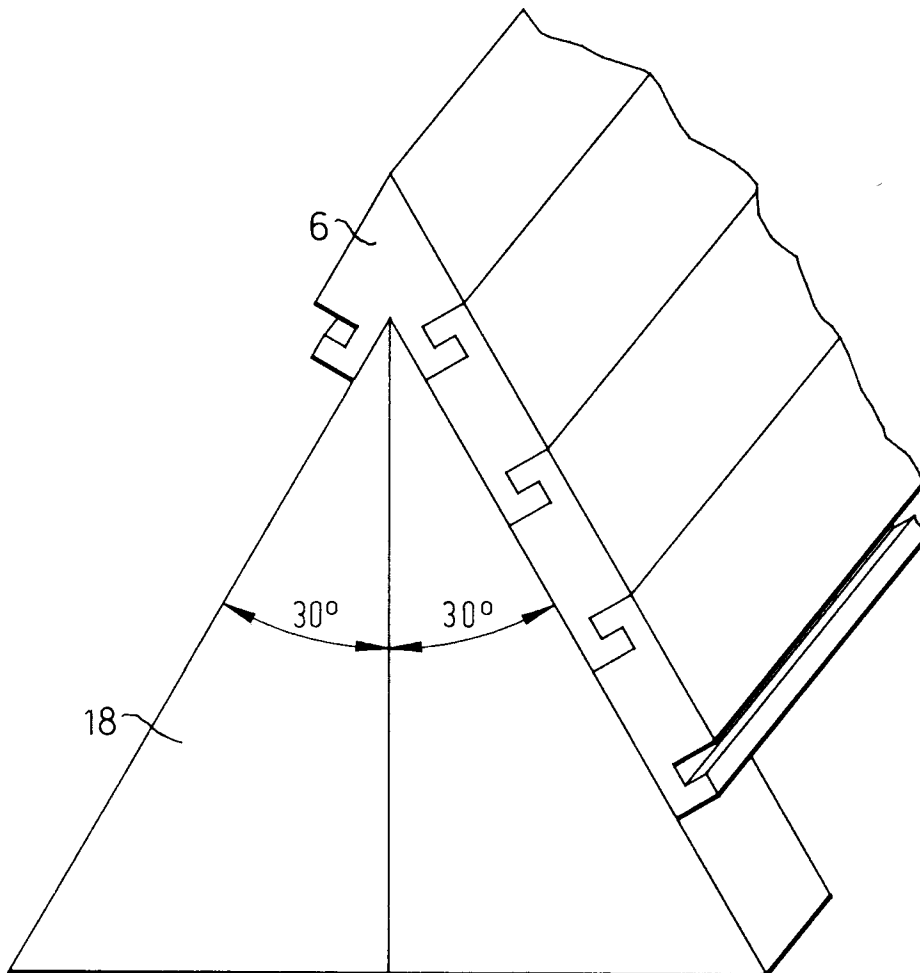


Fig. 3a

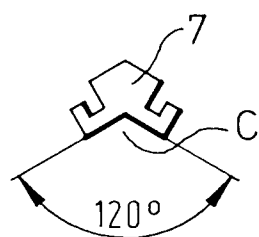


Fig. 4

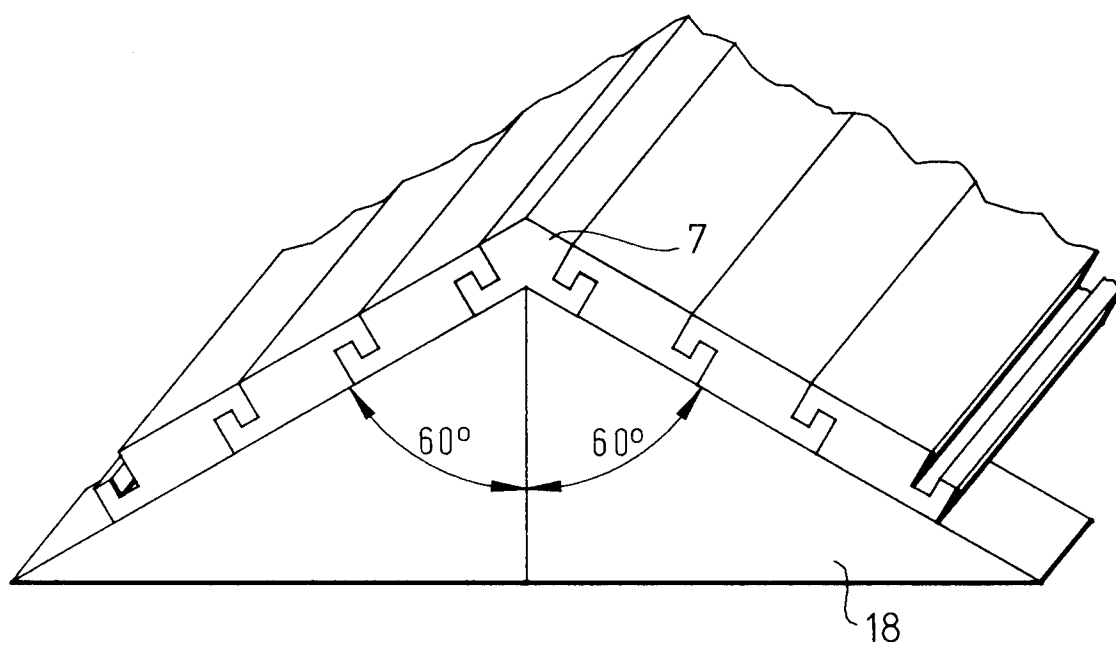


Fig. 4a

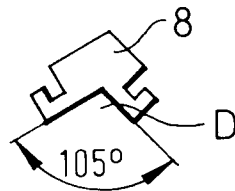


Fig. 5

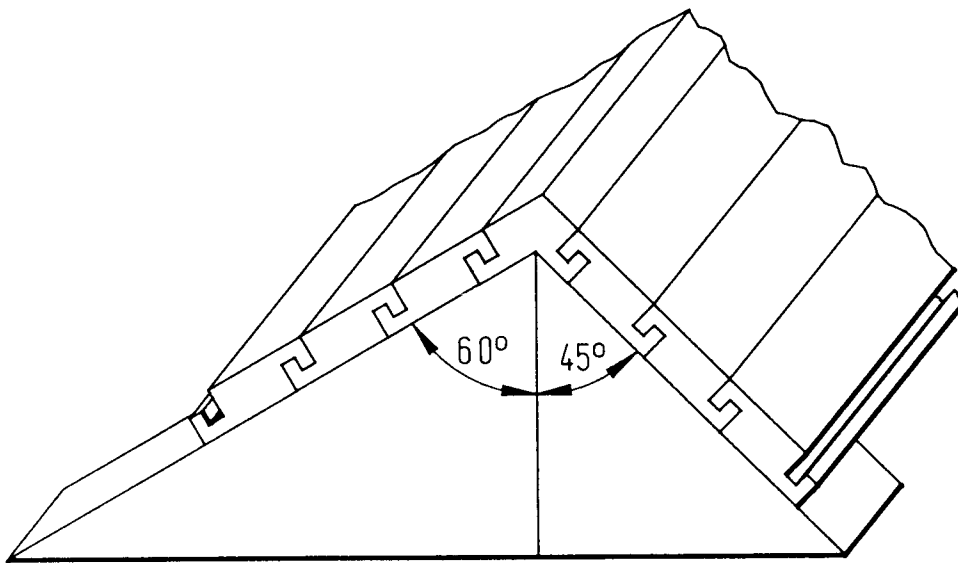


Fig.5a

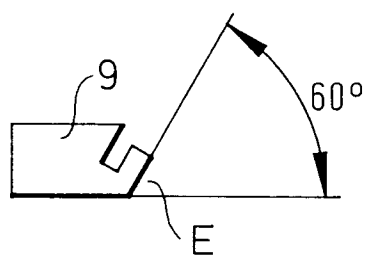


Fig. 6

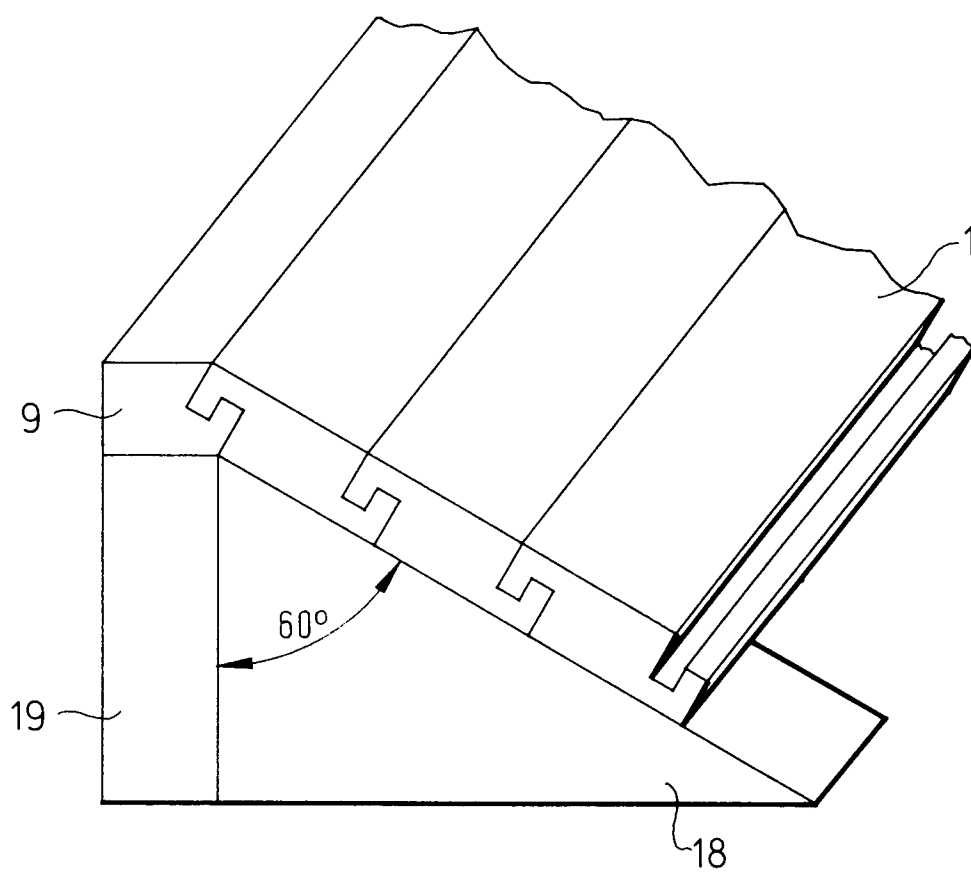


Fig. 6a

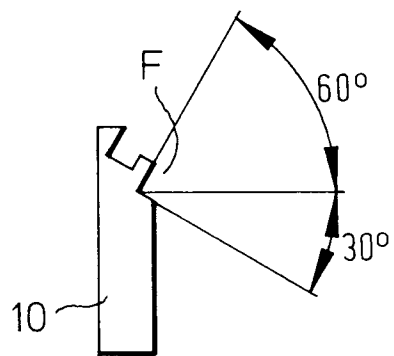


Fig. 7

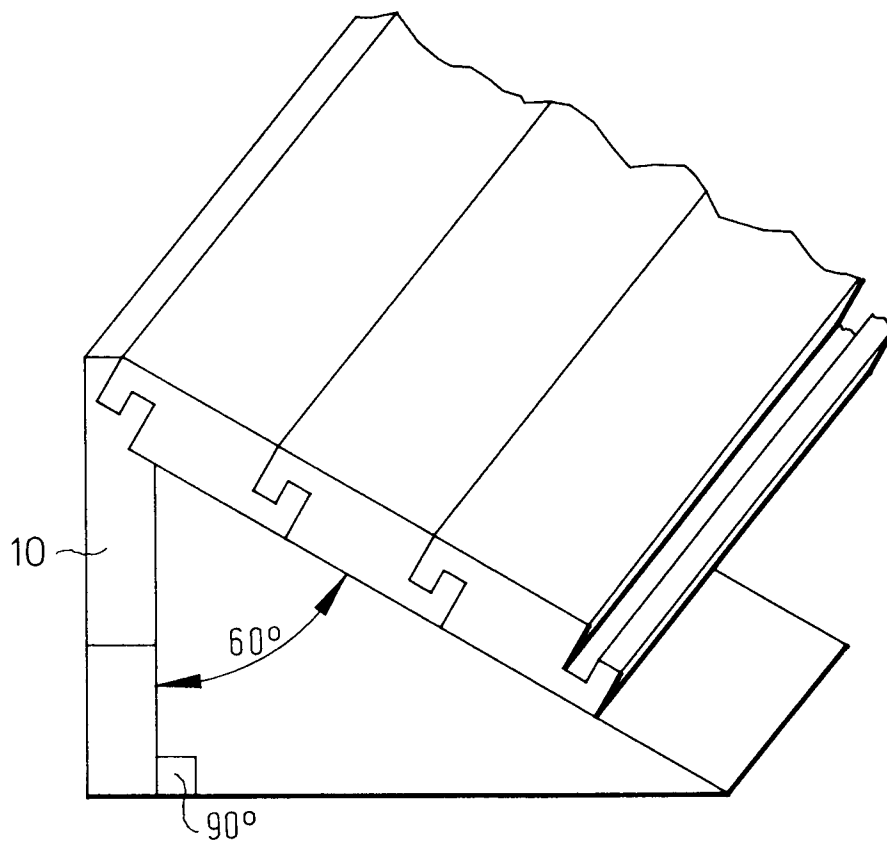


Fig. 7a

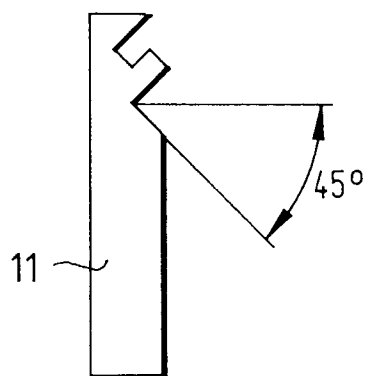


Fig. 8

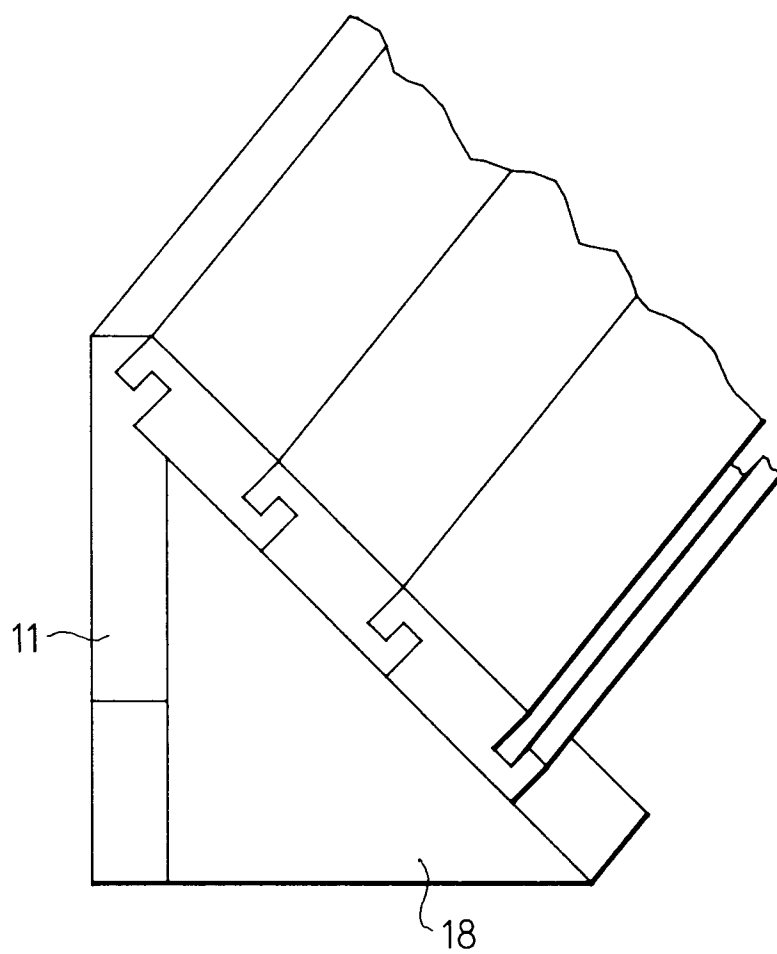


Fig. 8a

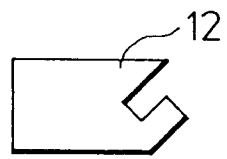


Fig. 9

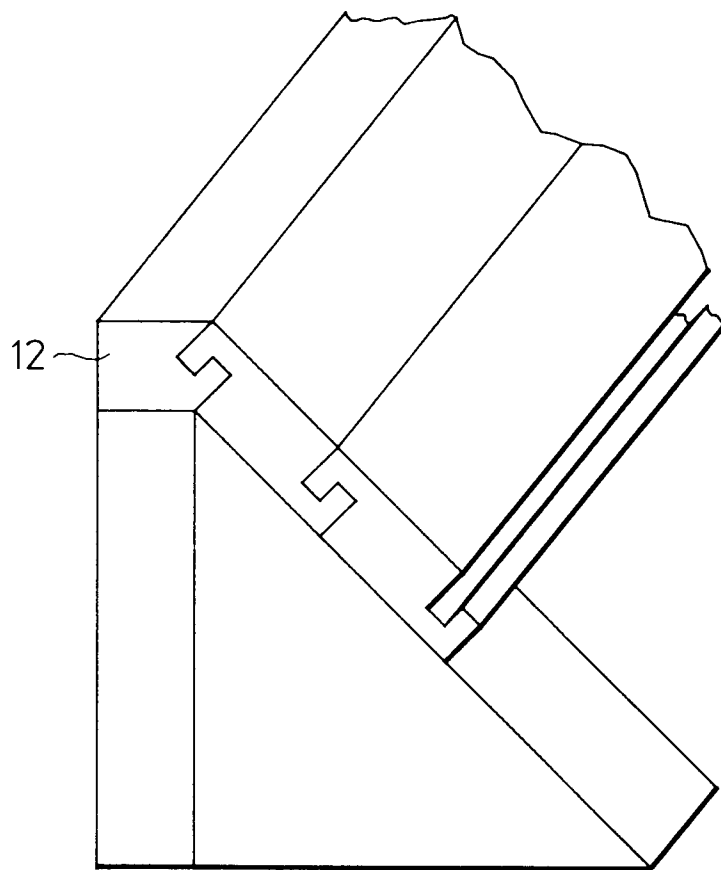


Fig. 9a

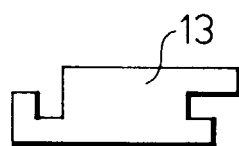


Fig. 10

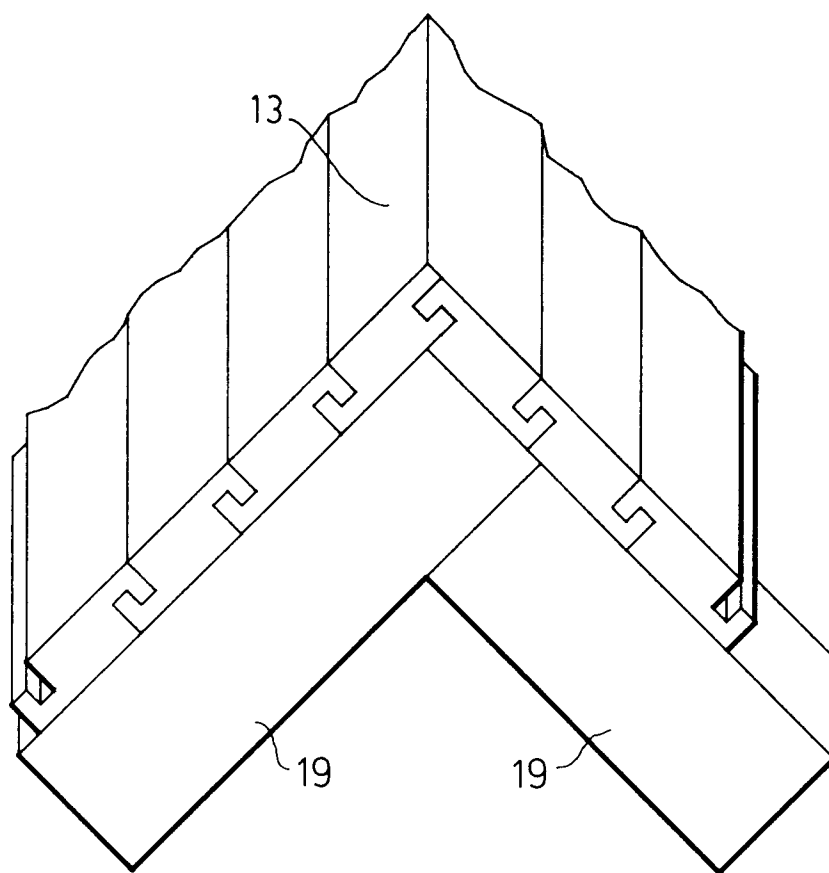


Fig. 10a

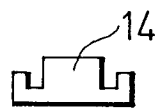


Fig. 11

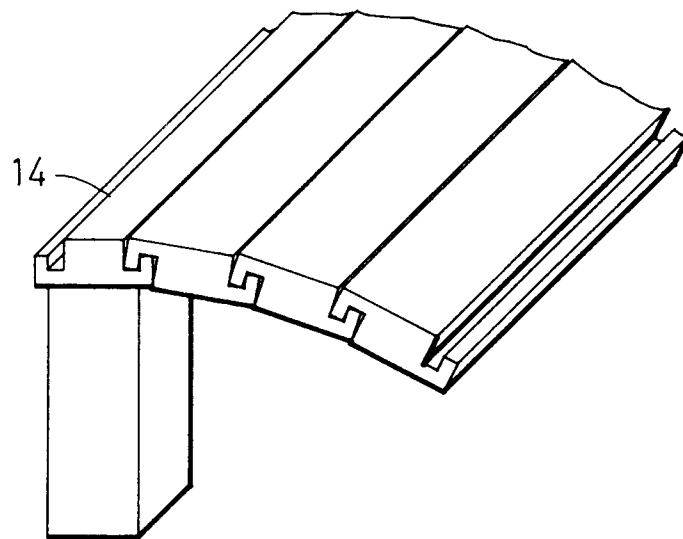


Fig. 11a

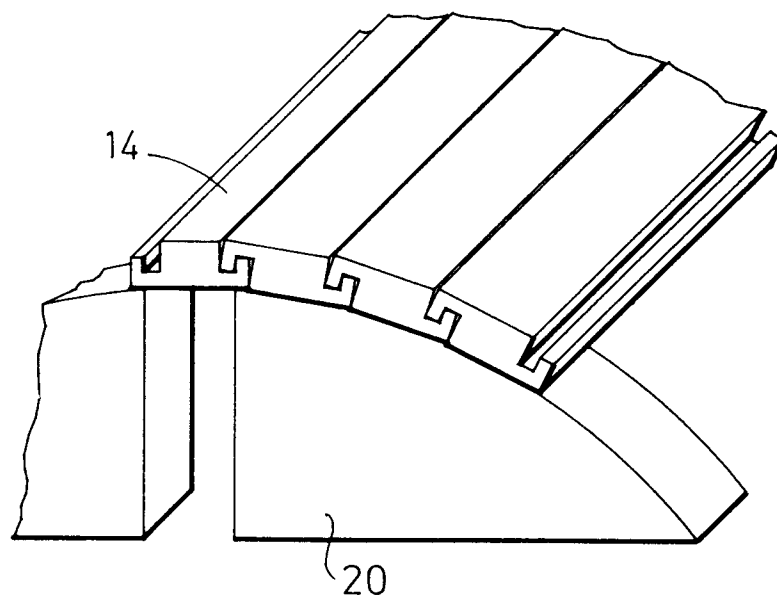


Fig. 11b

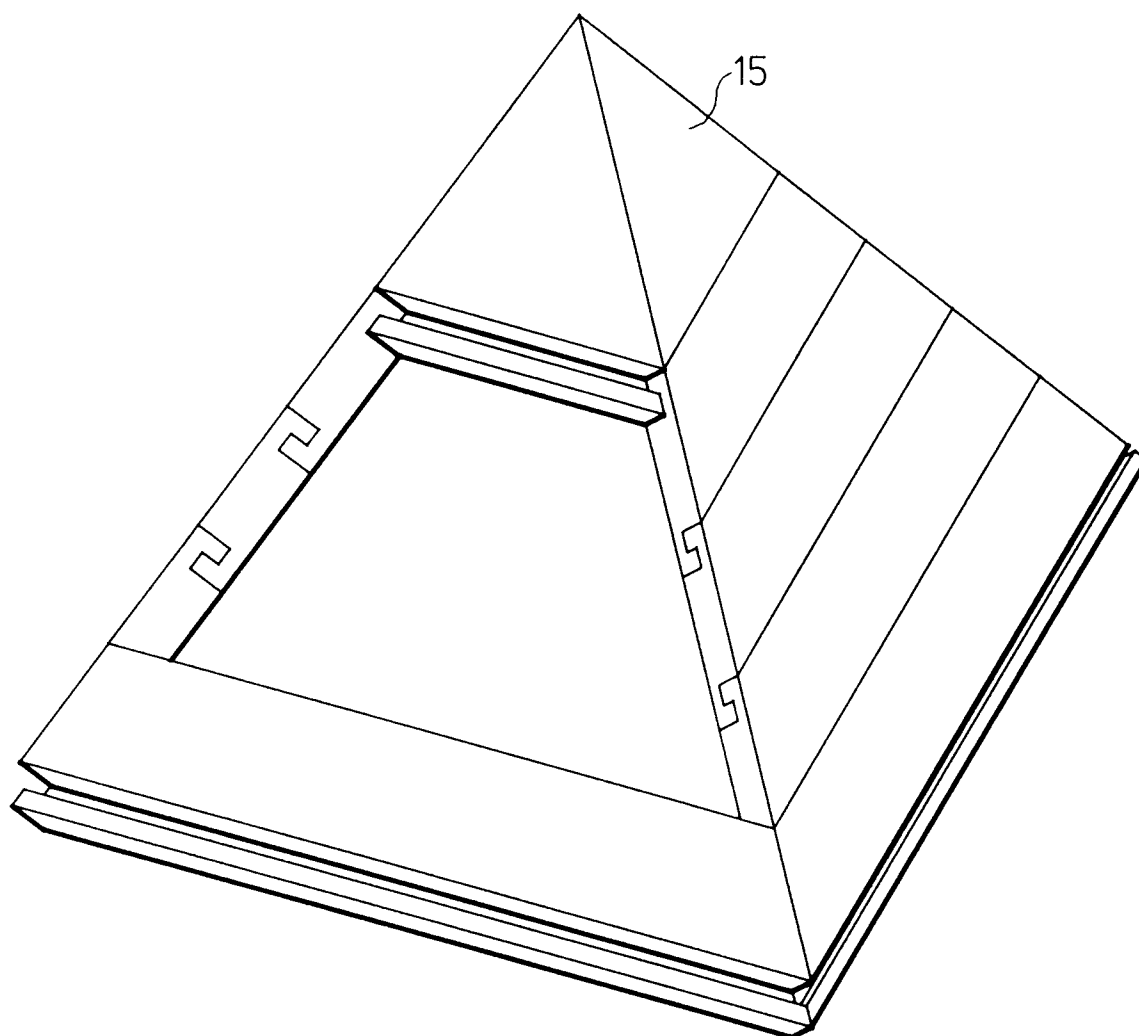


Fig. 12

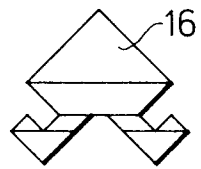


Fig. 13

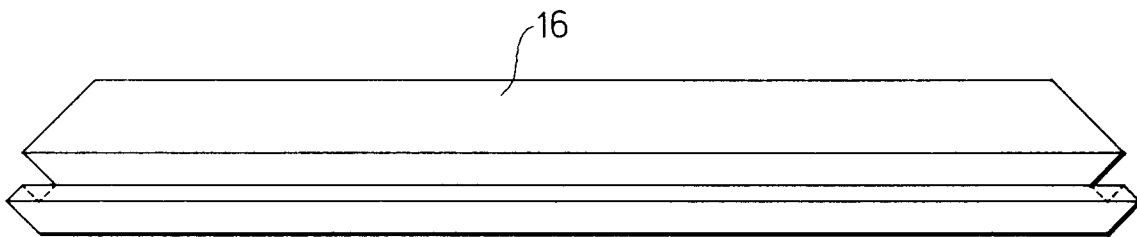


Fig. 14

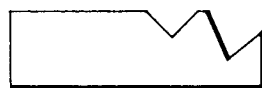


Fig. 15



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 10 1741

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A-1 165 532 (ROGER) * page 3, column 1, line 20 - line 23; figure 8 * ---	1,2,4	A63H33/08 A63H33/04
X	US-A-2 269 927 (CROOKS) * figure 3 * ---	1,2	
X	US-A-2 740 167 (ROWLEY) * the whole document * ---	1,2	
A	DE-C-874 263 (JÜRGENSMEYER) * the whole document * ---	1,3	
A	CH-A-511 342 (BARTÖCK) * the whole document * ---	1,2	
A	US-A-4 550 539 (FOSTER) * the whole document * ---	1,2	
A	DE-A-3 626 855 (MÜLLER) * the whole document * ---	1,5	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	DE-A-2 032 658 (LEGO) description * figure 3 * -----	1,2,5	A63H F16B E04F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 OCTOBER 1992	Examiner VANRUNXT J.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			